Advantages.—(1) The iridocapsulotomy scissors can be inserted through a smaller opening than is required by the de Wecker scissors; (2) the blades of the scissors completely fill the opening in the sclera made by the narrow keratome, thus preventing unnecessary loss of vitreous; (3) the scissors are more easily manipulated than the de Wecker scissors or the iridocapsulotomy scissors previously described.

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RETINITIS IN DERMATOMYOSITIS*

GORDON M. BRUCE, M.D.
New York

Dermatomyositis is defined by Osler as "an acute, subacute, or chronic disease of unknown origin, characterized generally by a gradual onset with vague and indefinite prodromes, followed by edema, dermatitis, and a multiple muscle inflammation."

The disease has been known by a variety of names. Wagner[1a,b] called it merely "A Rare Muscular Disease." Hepp[2] referred to it as "Pseudotrichinosis." Potain[3] believed it to be "Chronic Atypical Glanders." Senator[4a] named it "Neuromyositis," Oppenheim,[5a] "Dermato-mucomyositis," Lorenz,[6a] "Polymyositis haemorrhagica," Marcus and Weinstein,[7] "Dermato-muco-neuro-myositis." The name "Dermatomyositis," first introduced by Unverricht[8a] in 1887, still finds almost universal acceptance in the literature.

History.—The first case of dermatomyositis was reported by Wagner[1a] in 1863; the next by Potain[3] in 1875. Twelve years later Wagner,[1b] Hepp,[2] and Unverricht[8b,c] reported additional cases. In 1889 Senator[4b] pointed out that the

* Candidate's thesis for membership accepted by the Committee on Theses.

peripheral nerves were involved in the inflammatory process; and Oppenheim,[5a,b,c] in 1899, 1903, and 1904, drew attention to the involvement of the mucous membranes.

Incidence.—Oppenheim[5d] found that, although both males and females were attacked by the disease, males were more frequently affected. That it was not rare in children was noted by Lehmkuhl,[9] whose youngest patient was three years old; and by Demel,[10] whose patient died at the age of nine days. Although, as Caballero[11] reports, the disease occurs in the tropics, Friedman[12] believes that it is most frequent during cold weather. Epidemics of dermatomyositis have been reported by Lewy,[13] Sick,[14] and Curschmann.[113]

Etiology.—No satisfactory explanation as to the cause of dermatomyositis has ever been given. Sellei[118] believed that the disease was due to pancreatic dysfunction. Bacteria in the blood stream have been reported by Bacialli,[15] Kankeleit,[16] Mayesima,[17] and von Niedner[18]; bacteria in the muscles by Bauer,[19] Grunke,[20] Lorenz,[6a,b,c] and von Zalka[21]; and in the subcutaneous tissues by von Niedner[18] and French.[22] Many micro-organisms have been accused: streptococci by Fedeli,[23] French,[22] von Niedner,[18] von Wiesner,[24] and Landsteiner[25]; staphylococci by Bacialli,[15] Bauer,[19] Moore and Koch,[26] Kankeleit,[16] and Mayesima.[17] Meningococci were reported by von Zalka,[21] and gonococci by Eichhorst,[27] Ware, and Servel.[28] The tubercle bacillus was mentioned as the exciting cause by Oppenheim[5d] and Grunke.[20] In attempts to explain the disease some special organisms regarded as etiologic factors include the Micrococcus polymyositicus, described by Fox[29] and Martinotti,[30] a gram-positive bacillus reported by Schmautzer,[31] and a protozoan suspected by Unverricht,[8c] Lorenz,[6b] and Smith.[32] Herrick[114] regarded his case as syphilitic in origin. On the other hand, careful tests by Warszewski and Radzinski[33] failed to isolate any organisms.

The search for an etiologic factor has often been hindered by the co-existence of another disease. Dermatomyositis has

been reported as occurring in the course of acute articular rheumatism by Carlebach,[34] Edenhuizen,[35] Gottstein,[36] Hoegler,[37] Wasilieu and Eitwid,[38] and Risse.[39] It has been reported in influenzal angina by Blumer,[40] van Crevald,[41a,c] McLester,[42] and Wermer.[43] It has been observed in measles by Jessen and Edens,[44] in pertussis by Schueller,[45] in food poisoning by Senator,[4a,b,c] and in other gastro-intestinal disturbances by Allan,[46] Janowsky and Wyssokowicz,[47] and Stertz.[48] The disease has followed exposure to cold, as in the experience of Gowers[49] and Oppenheim,[5d] it has accompanied alcoholism, as reported by Wasilieu and Eitwid,[38] and has complicated gout, as observed by Oppenheim.[5b] It has been observed in the puerperium by Oppenheim,[5d] Unverricht,[8a,b,c] Waetzoldt,[50] and Winkel,[51] and in association with carcinoma by Bezecny.[52]

The consensus of opinion is that the disease is due to a toxemia of unknown origin.

Morbid Anatomy.—Wide differences exist in the extent of involvement, varying from part of one muscle only (Batten[53]) to the entire body (Oppenheim[5d]). At postmortem it may be found (McLester[42]) that muscle, fascia, and fat are almost indistinguishable. Waxy degeneration has been described by Carlebach[34] and Kriegsmann,[54] and calcareous necrosis by Hammes.[55] Microscopically, the epimysium and perimysium are usually thickened, and the fibers are vacuolated and nonstriated. The infiltration is chiefly lymphocytic and monocytic. In the skin, lymphocytes are found beneath the papillae and in the outer portion of the corium.

Symptoms.—The initial symptom may merely be early fatigue (Marinesco and his collaborators[56]) or the disease may be ushered in abruptly by a chill (Wasilieu and Eitwid[38]). Pain is an almost constant symptom, although at times there is merely hyperesthesia, as reported by Friedman,[12] or pain to light touch, as described by Jacoby.[57] Pain may be combined with numbness, as in the cases of Kriegsmann[54] and Wasilieu and Eitwid.[38] Severe pain in hands, feet, ears, and

abdomen has been reported by Loewenthal[73]; and tenderness over the supra-orbital and ulnar nerves has been noted by von Frisch[58] and Sluczewski[59] respectively.

Marked muscular weakness is a constant symptom, and is usually associated with pain on movement. Gwynn and Gorden[60] and Greenaway and Lambie[61] have reported cases of painful footdrop.

Oppenheim[5c] points out that the proximal part of a single extremity is usually the first to be affected. Schlesinger[62] asserts that a single muscle is always attacked first. Improvement in one muscle may be concurrent with involvement of another muscle (Kostrzeuski and Bobrzynski[63]). Involvement of the cervical, dorsal, and abdominal muscles has been reported by Schill,[64] Marcus and Weinstein,[7] and Sluczewski[59]; of the jaw muscles, by van Crevald[41b,c]; of the tongue, by F. Parkes Weber and Gray[65]; of the soft palate, by Heyn[66] and Schill[64]; and of the larynx, by Bolaffi,[67] Fajersztain,[68] Friedman,[12] Marinesco and his collaborators,[56] Wasilieu and Eitwid,[38] and Sluczewski.[59] Difficulty in mastication has been reported by Grunke,[20] and in swallowing by Batten,[53] Carney,[69] Heyn,[66] von Niedner,[18] and Steiner[70a,b,c]; the latter was the first symptom observed in cases reported by Wasilieu and Eitwid[38] and by Kroemer.[71] According to Carlebach,[34] Kriegsmann,[54] von Niedner,[18] and Schill,[64] the diaphragm and respiratory organs may be involved, but Bolaffi[67] is the only one to report death from this cause. Nodules have been felt by Schenk von Geyern,[74] Prinzing,[75] and Sluczewski.[59] Involvement of the heart muscle was reported by Friedman,[12] Lorenz,[6c] Oppenheim,[5a] Schmautzer,[31] von Zalka,[21] and Bauer.[19]

Tendon reflexes were found to be decreased by Lehmkuhl[9] and Oppenheim.[5d] Both authors pointed out that electrical testing is unsatisfactory because of pain and edema. A pseudo-Kernig sign has been elicited by von Niedner.[18] Various similarities to the findings in syringomyelia were noted by Fernandez Sanz.[72] Differences in temperature between

the healthy and the diseased extremities were observed by Loewenthal,[73] who found that the afflicted part was cooler.

The overlying skin may escape (Fels[76]), but it is usually involved. Edema, soft or hard, pitting or nonpitting (Schill,[64] Friedman[12]), has been observed on the lips (Joachim,[77] Wasilieu and Eitwid[38]), the penis (Joachim[77]), the face (Gwynn and Gorden[60]), and over the entire body (Steiner[70c]). Dermatitis is almost constantly present, and its appearance has been variously described: it was called "eczema" by Lehmkuhl[9]; by Sluczewski[59] it was said to resemble erysipelas; by F. Parkes Weber and Gray[65] it was said to resemble measles, and again, varicella. To McLester[42] it recalled lichen planus. It was vesicular in cases observed by Steiner,[70c] maculopapular in the experience of von Niedner,[18] and it suggested erythema multiforme to Friedman.[12] It was described by Joachim[77] and Sluczewski[59] as acrodermatitis. In color it varied from the slight redness observed by Batten[53] to the heliotrope color seen by Stuckey.[78] Desquamation was noted by Marinesco and his collaborators,[56] Wasilieu and Eitwid,[38] and Batten.[53] In the experience of van Crevald[41a] the dermatitis proved transitory.

Sometimes the skin is merely thickened (Grunke[20]). Pruritus may or may not be present (von Niedner,[18] Schill[64]). Atrophy may supervene, and may be localized, as in the cases observed by Blumer,[40] McLester,[42] Sluczewski,[59] and Zoon,[79] or generalized, as reported by Grunke.[20] There may be hyperhidrosis (Kostrzeuski and Bobrzynski,[63] Gwynn and Gorden,[60] von Niedner[18]), or loss of hair (Kankeleit[16]). Pigmentation has been observed by Wasilieu and Eitwid,[38] Grunke,[20] and Kriegsmann,[54] and telangiectasis has been reported by McLester[42] and Grzybowski.[80] Petechiae have been seen by Blumer,[40] Lehmkuhl,[9] and Pick.[81] "Blue spots," which, from the description, were probably petechial in character, were described by Karlmark.[82]

The mucous membranes may escape (Kornilow[83]), but are usually affected. Involvement varies from a slight hyperemia

to a necrotic ulceration. Atrophy has been noted by Grunke.[20] Inflammation of the pharynx and adjacent tissues has been reported by Kostrzeuski and Bobrzynski,[63] Friedman,[12] and von Frisch.[58] In a case reported by Gwynn and Gorden[60] the saliva was foamy. Conjunctivitis was found by von Niedner[18] and Oppenheim.[5c] The latter has also reported involvement of the external auditory canal.

The spleen may be smaller than normal (Wasilieu and Eitwid[38]), but is usually enlarged—sometimes to twice its normal size. Various degrees of enlargement are reported by Bronson,[85] van Crevald,[41a] Gwynn and Gorden,[60] Kostrzeuski and Bobrzynski,[63] von Niedner,[18] and Schill.[64]

The liver is often enlarged (van Crevald,[41a] Fiedler[86]).

The lymph glands may escape, but painful enlargement of the axillary, cervical, and inguinal glands has been reported by Fiedler.[86] The parotid gland was swollen and tender in a case observed by Gwynn and Gorden.[60]

Arthritis may be present, and either involve a few joints (F. Parkes Weber and Gray[65]) or be generalized (Kroemer,[71] Oppenheim[5c]).

Intestinal hemorrhage was noted by Buss.[87]

The temperature is usually elevated, but may remain normal.

Laboratory Findings.—Eosinophilia of various degrees was encountered by McAlpin,[88] van Crevald,[41c] Akerrén,[89] Grunke,[20] Lundquist,[90] Kostrzeuski and Bobrzynski,[63] Sydenstricker and Thomas,[91] and Wermer.[43] Fiedler[86] reported eosinophilia of 76 per cent.

Urinary findings are dependent upon the presence or absence of kidney involvement. Urea nitrogen of 27.2 mg. per cent. with no other abnormal findings was reported by Joachim.[77] Creatinuria may be present (Dilger,[92] Wolf and Wilens,[93] Steinitz and Steinfeld[84]), due to the lessened ability of the muscles to store creatin.

Marinesco and his collaborators[56] found the blood calcium to be increased to 16.8 mg. per cent.

The basal metabolic rate has been found to be normal by Sluczewski[59] and F. Parkes Weber and Gray[65]; and to be slightly elevated by Carney[69] and Joachim.[77]

Prognosis.—The prognosis as to life is grave. Steiner[70c] reported 17 deaths in 28 cases. Recovery in severe cases has been recorded by Unverricht,[8a,b,c] Lorenz,[6b] Neubauer,[94] Buss,[87] Christen,[95] Edenhuizen,[35] Georgiewsky,[96] Hnátek,[97] Herz,[98] Gottstein,[36] Lewy,[13] and Sick.[14] The prognosis is considered by Lehmkuhl[9] and Keller[119] to be better in children.

The disease may last from a few weeks to several years. Weinberger's[99] patient recovered after suffering for nine years. Recessions and exacerbations are common (Oppenheim,[5d] Sick,[14] Waetzoldt,[50] and Turner[100]).

The usual cause of death is bronchopneumonia (Davison[101]).

Differential Diagnosis.—The differential diagnosis must include trichinosis, muscular rheumatism, neuritis, myositis ossificans, syphilitic myositis, erysipelas, and myasthenia gravis. Urbach[102] pointed out that lymphoid leukemic infiltration of the skin may prove a source of confusion. If one extremity is involved, plexus neuritis may be simulated (Wertheim-Salomonson[116]); and, of course, inflammatory (Fraenkel[117]) and traumatic (Hachenbruch[115]) myositis must always be ruled out. Litten[103] has described how carbon monoxide poisoning may produce muscle changes resembling those seen in dermatomyositis; and Lepine,[104] while admitting that the history should prevent confusion, draws attention to the similarity of the lesions found in dermatomyositis and those encountered in Volkmann's contracture. Kussmaul and Maier[105] and Strümpell[106] have shown that periarteritis nodosa may simulate dermatomyositis. The difficulty encountered in ruling out scleroderma is emphasized by F. Parkes Weber and Gray,[65] Dietschy,[107] and Grzybowski.[80] Indeed, the two diseases have been found to co-exist (Hoover,[108] Klingman,[109] Rosenthal and Hoffman,[110] Friedman,[12] and Bing[111]). That the morbid anatomy in the two diseases is essentially the same is the opinion of Allan,[46] Friedman,[12] and

Langmead[112]; a complete study is necessary in order to make the differential diagnosis (Marcus and Weinstein[7]).

Treatment.—There is no specific treatment. In many cases tonsillectomy has been done, with disappointing results. Diaphoresis, wet packs, and massage are advocated by Oppenheim,[5d] hot-air baths by F. Parkes Weber and Gray,[65] neosalvarsan by Kroemer,[71] quinin and ferric chlorid by van Crevald,[41a] and calcium chlorid by Heyn.[66] Pancreatic extract was used by Sellei[118] in his case, with favorable results.

DERMATOMYOSITIS AND THE EYE

Conjunctivitis, iritis, ptosis, and paralysis of the external ocular muscles have been observed by Oppenheim[5d]; lateral nystagmus by Marinesco and his collaborators[56] and by Wagner,[1a] and exophthalmos by Heyn.[66] That the retina may be involved is demonstrated in the following cases:

CASE 1.—L. H., a female child, aged eleven years, was admitted to the Babies' Hospital complaining of listlessness, stiffness of the neck, and a rash on the face, back, and buttocks. The temperature was normal.

Examination revealed a macular erythematous skin lesion on the face, trunk, and arms. On the face the lesion presented a "butterfly" distribution; on the back there was an area, 5 by 5 cm. in diameter, under each scapula where the erythema was more marked. There was a brawny desquamation on the upper arms. The upper and lower eyelids and the lips were the seat of a pitting edema. On the mucous membrane of the mouth there were irregular patches of whitish exudate, which were easily scraped off. The neck was symmetrically swollen, so that the supraclavicular and suprasternal fossae were obliterated. Flexion of the neck was painful. There was tenderness over the fifth, sixth, and seventh cervical vertebrae. The heart, lungs, and abdomen were normal. There was a slight nontender enlargement of the anterior and posterior cervical glands, and the epitrochlear and axillary nodes were palpable. The neurologic examination was negative. On admission the blood count was: Hemoglobin, 93 per cent.; red blood cells, 4,800,000; white blood cells, 9,750; polymorphonuclears, 78 per cent.; lymphocytes, 22 per cent.; Schilling, 2–41–25. Two days

later the count had changed to hemoglobin, 82 per cent.; red blood cells, 4,200,000; white blood cells, 3,500; polymorphonuclears, 81 per cent.; lymphocytes, 15 per cent.; eosinophiles, 3 per cent.; Schilling, 0–51–30. The blood chemistry was normal. The urine showed a very faint trace of albumin, but the Addis count revealed only mild irritation. Tuberculin and Kahn tests, as well as lumbar puncture, gave negative results.

Examination of the eyes revealed a pitting edema of the upper and lower lids, which were neither red nor tender. The conjunctivae, muscles, corneas, pupils, and media were normal. The retinal veins were somewhat distended, but the arteries were normal. The discs were negative. In the posterior poles, around the discs, and involving the maculas, were extensive areas of whitish exudate, mostly superficial, although a few detached spots were crossed by the vessels. Several small hemorrhages—some round, some flame-shaped—were seen near the larger patches of exudate. The patient's condition was such as not to permit testing of the visual acuity or central fields.

These lesions slowly increased in size and number, the smaller deep areas becoming more superficial as they enlarged and became confluent. Fresh hemorrhages appeared, and changes became apparent almost every day.

The temperature remained normal until the fifteenth day of hospitalization, when bronchopneumonia developed. On this date muscle tenderness in the upper arms and chest was noted for the first time. The patient died the next day.

At autopsy death was found to have been due to bronchopneumonia.

In the pathologic report the pectoral muscle was described in part as follows: "The degenerative changes in the muscle fibers are so extensive that whole bundles are involved. About some of the fibers there is a proliferation of nuclei . . . slight lymphocytic infiltration about the small arteries . . . Cytoplasm is swollen and has undergone hyaline necrosis, and in other fibers the sarcolemma sheath is filled with a granular eosinophilic substance. . . . "

Permission for postmortem enucleation of the entire eye had unfortunately not been secured, but the posterior poles were obtained. On these Dr. C. A. Perera reported: "The specimen is the posterior segment of a globe, including the optic nerve, disc, and 5 or 6 mm. of the ocular layers on either side. The sclera and choroid are essentially normal, as is the optic nerve. The retina shows exten-

sive postmortem changes, with swelling of the nerve-fiber layer and of the disc margins, due to edema of these tissues. Here and there in the thickened nerve-fiber layer are seen groups of globular bodies which are apparently swollen and varicose nerve fibers. In the outer layers of the retina, especially the outer plexiform layer, there are a number of areas containing an albuminous deposit. These deposits are also present in the internal nuclear layer in some regions. There are a few small hemorrhages seen in all of the retinal layers, but especially in the inner plexiform and inner nuclear layers. *Conclusions:* This portion of the globe shows extensive postmortem changes which render the findings in the retina somewhat obscure except for definite exudative deposits in the deeper layers and small hemorrhages. *Diagnosis:* Retinitis of unknown etiology. Retina: postmortem changes."

The final diagnosis was dermatomyositis.

CASE 2.—C. N., a boy, aged eleven years, complained that three weeks before admission to the Babies' Hospital he had contracted a slight sore throat. His temperature rose to 103.5° F., and he vomited once. The cervical glands were enlarged. One week later a maculopapular rash appeared on the face, arms, and legs; this disappeared in three days. Several days later a "flush" appeared on the face and eyelids, followed by a macular rash on the folds of the neck and on the extensor surfaces of all the large joints. Later, vascular lesions were seen in the mouth.

Examination revealed a blotchy, cherry-red macular rash on the cheeks, eyelids, and lips, and extending backward to the ears. A similar patch was seen on the anterior surface of the neck, above the clavicle. Over the extensor surfaces of all the large joints there were erythematous patches, and in the groins, antecubital spaces, and axillae there were erythematous streaks. The erythema blanched on pressure and was hot to the touch. The gums were red and edematous, and on the buccal mucous membrane opposite the upper right molars there was a grayish-white, necrotic patch. There were enlarged, slightly tender glands in the angle of the jaw bilaterally. The posterior cervical and inguinal glands were enlarged but not tender. The chest and abdomen were normal, and the neurologic examination was negative. The blood-pressure was 105/75, and the temperature was 100.8° F.

The blood count was: Hemoglobin, 96 per cent.; red blood cells, 4,450,000; platelets, 218,000; white blood cells, 6,450; polymorphonuclears, 85 per cent. The sedimentation rate was 25 mm. one-half hour, 52 mm. one hour. The urine showed a very faint trace

of albumin. Tuberculin and Kahn tests were negative. The throat culture showed the predominant organism to be the staphylococcus aureus haemolyticus.

The patient ran a low-grade fever for four weeks. Then the voice became husky, there was difficulty in swallowing, the dependent parts of the skin were found to be mottled and congested, and there was a nonpitting edema involving chiefly the face and the dorsum of the right hand. Generalized weakness, particularly of the thigh muscles, next appeared. The paretic muscles were acutely tender to pressure. The spinal fluid, which was under pressure, was normal. The electrocardiogram was negative. The sedimentation rate rose to 106 mm. one hour, but decreased as the patient improved to 73 mm. one hour.

The eyes were examined at this time. Except for slight edema of the lids, the external appearance was normal. The fundi (see illustration) showed slight haziness of the discs, but no elevation. The veins were distended. The arteries were normal, and as they crossed they indented the veins somewhat. Scattered over the posterior poles of each eye, including the macula, were ill-defined areas of grayish-yellow exudate, roughly circular in shape, and varying in size from small dots to patches slightly smaller than the disc. The larger areas tended to coalesce and overlie the vessels: the smaller were invariably deep in situation. The larger patches resembled somewhat the "cotton-wool" exudates of albuminuric retinitis: the smaller ones were reminiscent of choroidal tubercles. An occasional deep or superficial hemorrhage was seen.

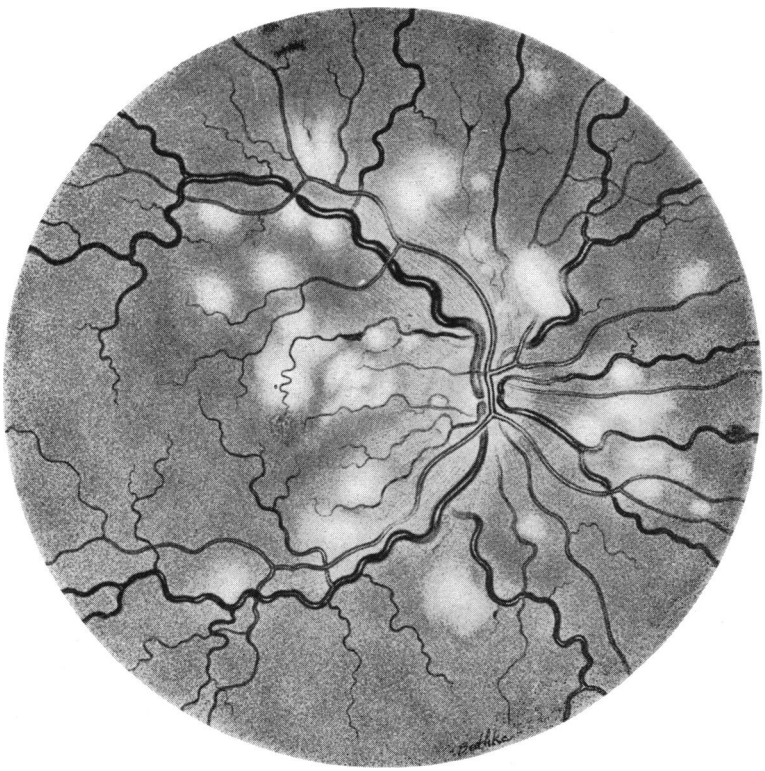
Visual field and acuity testing could not be done, but the patient complained of dimness of vision.

In about two weeks' time improvement set in. Muscle weakness and pain disappeared, and the fundi gradually returned to normal. No pigmentation or other sign of choroidal involvement was seen after recovery.

The final diagnosis was dermatomyositis.

CASE 3.—S. B., a Jewish milkman, aged twenty-six years, complained that two weeks before his admission to the Presbyterian Hospital he had suffered severe pains in his thighs, especially on walking; a sore throat; low fever; and a sense of extreme exhaustion. Family and previous history were irrelevant.

The entire mouth was bright scarlet in color, very dry, and free from exudate and ulceration. There was slight enlargement of the cervical nodes on each side. The abdomen and chest were essentially normal. There was extreme pain in both legs on motion.



Retinitis in a case of dermatomyositis.

Two tender red streaks extended from the tendons of the wrists up the forearms, which later became much swollen. Reddening of the knuckles of the left hand was observed shortly after this; swelling, redness, tenderness, and edema were present over the right sacrum. A calculus was discovered in the pelvis of the right kidney. The blood-pressure at first was 160/92, but subsequently fell to 110/70. The blood count was: Hemoglobin, 110 per cent.; red blood cells, 6,080,000; white blood cells, 11,550; polymorphonuclears, 87 per cent. Blood cultures were negative. Nonprotein nitrogen was 38. The serum protein was 4.8, 4.5, 4.8, 5.86, and 5. Blood cholesterol was 245; sedimentation rate, 41, 53, 15, 43, 46, 26, and 16. Blood and spinal Wassermann tests were negative, and the colloidal gold curve was normal. Agglutination test for Bacillus abortus was negative. *X*-ray examination of the chest and pelvis, blood cultures, and electrocardiogram were likewise negative. Throat cultures revealed nothing significant. The urine showed at first a trace of albumin and many red blood cells, but these findings later disappeared.

Biopsies from the right deltoid and skin of the right wrist were reported upon as follows:

"*Muscle:* There is considerable thickening of the epimysium. Rare perivascular monocytes and lymphocytes are found in this sheath. The perimysium is slightly thickened and presents mild perivascular lymphocytic and monocytic infiltration, with occasional polymorphonuclears. The endomysium is similarly affected in some areas, and is quite free of exudate in others. Many of the muscle fibers are vacuolated, and quite often the vacuoles contain finely granular, eosinophilic material. Parts of fibers are found to have lost their striations, and at these points they appear semihyaline and at times exhibit small vacuoles. There are, in addition, focal areas of granular degeneration, with loss of striation, multiplication of muscle nuclei, and the frequent presence of polymorphonuclear leukocytes. The muscle nuclei have also proliferated in fibers in which very little degeneration can be made out. No abnormality of the sarcolemma sheaths is noted, nor are there any regenerative phenomena. *Skin:* The papillae are flattened in one small area. Small numbers of lymphocytes are found beneath the papillae and perivascularly in the outer portion of the corium. *Diagnosis:* Dermatomyositis."

The eyes were normal externally. Examination of the fundi revealed a slight blurring of the nasal half of each disc. The retinal veins were distended and indented by crossing arteries. The

arteries were normal. Around the discs and over and below the maculas were a number of irregular, indefinitely outlined patches of grayish-yellow retinal exudate. These were largely superficial, but a few of the smaller areas lay beneath the vessels. There were a number of hemorrhages, both superficial and deep, which lay chiefly along the veins.

The acute illness of the patient made it impossible to obtain a record of the vision and the visual fields.

A low-grade fever persisted for a time. Shortly after admission edema of the legs appeared, and spread slowly upward until it involved the entire body, including the face. Muscle weakness was so great that tubal feeding was necessary. After a time, however, aided by two blood transfusions, the patient gradually improved. His recovery was reflected in his fundi, which slowly returned to the normal. On discharge, no signs of his illness remained.

The final diagnosis was dermatomyositis.

SUMMARY AND CONCLUSIONS

The literature on dermatomyositis is reviewed. Three cases of the disease are reported. In each of these an unusual form of retinitis was observed. The retinal lesions were identical in appearance and behavior. Their presence indicates the fact, previously unsuspected, that during the course of dermatomyositis the retina may become involved.

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THE BIOCHEMISTRY OF THE OPTIC NERVE*

ARLINGTON C. KRAUSE, M.D.
Chicago

In the general study of the biochemistry of a tissue the usual initial procedure is to perform gross analyses of the tissue as a basis for further investigations. These analyses provide us with a conception of the various constituents of which the tissue is composed. Next in order are the analyses of the components of each constituent. The dynamic physiologic units then may be more easily isolated and traced through their metabolic processes. As our knowledge of the biochemistry of the tissue progresses the chemistry in relation to growth, genetics, and pathology may be developed upon this background. The study presented herewith has followed this general plan.

A review of the literature discloses that only sporadic reports on the chemistry of the optic nerve have as yet been published. Van Heuven and Fischer[1] studied the ability of the optic nerve tissue to bind water. Lo Cascio[2] separated a few lipids of this nerve according to their solubilities in

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